

CLAIMS

1. An acoustic liner (1) arranged to attenuate sound, comprising a top sheet (5) having substantially linear characteristics and a liner core (2) or cavity, characterized in that the top sheet (5) comprises a layer (3) of a metallic foam.

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2. An acoustic liner according to claim 1, characterized in that the top sheet (5) has a non-linearity factor within a range between 1.0 and 3.0.

3. An acoustic liner according to claim 2, characterized in that the non-linearity factor is within a range between 1 and 2.5.

4. An acoustic liner according to claim 3, characterized in that the non-linearity factor is within a range between 1.5 and 2.0.

- 15 5. An acoustic liner according to claim 1, characterized in that a first surface of said metallic foam layer (3) is attached to one side of said liner core (2).

- 20 6. An acoustic liner according to claim 1, characterized in that the liner core (2) is a honeycomb core.

7. A metallic liner according to claim 1, characterized in that the liner core (2) is a core of metallic foam.

- 25 8. An acoustic liner according to claim 1, characterized in that the top sheet (5) further comprises a perforated sheet (4) attached to the metallic foam layer (3).

- 30 9. An acoustic liner according to claim 1, characterized in that the metallic foam layer (3) is arranged to withstand temperatures above about 400°C.

10. An acoustic liner according to claim 9, characterized in that the metallic foam layer (3) is arranged to withstand temperatures around 700°C.

5 11. An acoustic liner according to claim 10, characterized in that the metallic foam layer (3) comprises a metal or metal alloy including Nickel, Titanium and/or Chromium.

10 12. An acoustic liner according to claim 1, characterized in that the metallic foam is at least partly open-porous.

15 13. An acoustic liner according to claim 1, characterized in that the top sheet (5) is compressed.

20 14. An acoustic liner according to claim 13, characterized in that the top sheet (5) is compressed to a different degree in different areas of the sheet.

25 15. An acoustic liner according to claim 14, characterized in that the degree of compression is stepwise increased/decreased over the top sheet.

20 16. An acoustic liner according to claim 14, characterized in that the degree of compression is continuously changed over the top sheet.

25 17. An acoustic liner according to any of the claims 1 to 16, characterized in that the top sheet (5) is designed for attenuating various acoustic environments such as different flight conditions for aircraft engines.

30 18. Use of a liner according to any of the claims 1-17 in a hot stream environment.

30 19. Use of a liner according to claim 18 in a hot area of an aircraft engine.

20 20. Method for manufacturing an acoustic liner (1), characterized in that it includes the following steps:

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- forming a top sheet (5) including a metallic foam layer (3) and having substantially linear characteristics and
- brazing said top sheet (5) onto one side of a liner core (2).

5 21. Method according to claim 20, characterized in that a perforated sheet (4) is brazed onto the foam layer (3) in forming the top sheet (5).

10 22. Method according to claim 20, characterized in that the top sheet (5) is formed through applying pressure to selected areas (5a, 5b, 5c, 5d) of the top sheet surface.

15 23. Method according to claim 22, characterized in that the pressure is applied to a different degree in different areas (5a, 5b, 5c, 5d) of the top sheet (5).

24. Method according to claim 23, characterized in that the pressure applied over the different areas is stepwise increased/decreased.

20 25. Method according to claim 23, characterized in that the pressure applied over the different areas is increased/decreased in a continuous manner.